General Physics I - PHYS 1410 Section 004 (Fall 2026)

Instructor Information

Dr. Rebekah Purvis Email: rebekah.purvis@unt.edu Office: Physics Building, Room 209E

The best way to reach me with questions or concerns is via Canvas messages.

Office hours:

Monday	Tuesday	Wednesday	Thursday	Friday
-	9:30-10:30 am	-	-	10:30-11:30 am
2:30-3:30 pm	1:00-2:00 pm	-	2:00-3:00 pm (on Teams)	-

I am excited to work with you this semester! My research background is in heliophysics, which is the study of the Sun and its effect on objects in the solar system. I am passionate about creating a positive learning environment for students…especially given the reputation that physics has. I hope by the end of the semester you have an appreciation for how physics can be applied to your life and career.

Teaching Assistants: Tayyaba Batool, Bhojraj Bhandari, Taylor Mestas, and Agra Wickramagedara
Office hours: Will be posted in Canvas

Welcome

As members of the UNT community, we are committed to fostering an environment that respects and values the identities of all students and employees. UNT does not tolerate identity-based discrimination, harassment, or retaliation. Everyone should feel comfortable being their authentic selves in our class. If you have any questions or concerns, please feel free to contact me.

Communication Expectations: All course materials and announcements will be available on Canvas. For questions or concerns, please send me a message in Canvas, and include "PHYS 1410" in the subject line. If you contact me and do not receive a response within two business days, please send a follow-up message.

Course Description, Structure, and Objectives

This non-calculus (algebra based) physics sequence is designed for life sciences majors and pre-professional students. During the course, we will cover a variety of topics, including mathematical concepts, kinematics in one and two dimensions, forces and Newton's laws, uniform circular motion, work and energy, momentum, rotational dynamics, simple harmonic motion, fluids, waves, sound, and thermodynamics. Due to the breadth of material, some chapters may not be covered in full.

This is an in-person, 16-week course. Class lectures and recitations will be presented as scheduled, and class exams will be held in person. We designed this course to support your growth in problem solving and scientific reasoning, with opportunities for recovery on major assessments. Homework will be assigned and submitted using Physics LE: https://login.physicscurriculum.com/login/index.php, which is also reachable through the Canvas course page. Copies of lecture slides and/or outlines will be posted to Canvas before lectures start.

The essential questions for this course are:

1. How do you describe motion quantitatively?

2. What causes motion to change?
3. What constrains possible or likely outcomes?
4. How do you apply ideas from Essential Questions 1-3 to systems of many interacting particles?

We will use a combination of active group work, lectures, demonstrations, discussions, interactive conceptual and quantitative questions, and at home preparation and practice.

There are four main units to this course, with both individual and cross-cutting learning objectives. The four units are: Foundations of Motion; Conservation Laws; Rotation and Fluids; and Thermodynamics and Waves.

A complete list of learning objectives is in Canvas, but here are a few examples:

- Unit 1, Foundations of Motion: Calculate displacement of an object that is not accelerating, given initial position and velocity.
- Unit 2, Conservation Laws: Use conservation of energy to solve physical problems.
- Unit 3, Rotation and Fluids: Analyze stability in physical systems.
- Unit 4, Thermodynamics and Waves: Connect fluid principles to biological and medical applications.
- Cross-cutting: Distinguish between physical quantities, units, and dimensions.

This course is a part of the Life and Physical Sciences core. Courses in this category focus on describing, explaining, and predicting natural phenomena using scientific methods. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences by fostering skills associated with the four core objectives:

- **Critical Thinking Skills**, including creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Communication Skills**, including effective development, interpretation and expression of ideas through written, oral and visual communication
- **Empirical and Quantitative Skills**, including the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- **Teamwork**, including the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Lab Credit: You must enroll separately in Physics 1430 for laboratory science credit.

How to Succeed in this Course

Course Pre-requisites

There are no required prerequisites for this course. However, to be successful in this course, you will need to:

- Have proficiency in college algebra and trigonometry (or be willing to put in work at the beginning of the semester to gain proficiency).
- Network with others and utilize tact when offered differing perspectives.
- Make the commitment to spend at least 10 hours a week completing home prep and practice assignments and participating in lecture and recitation sessions.

Attendance

You are expected to attend all lectures and recitations for the section in which you are enrolled. Being punctual indicates our respect for others. Please arrive before class begins to find a seat, prepare your materials, and connect with your peers. The beginning of class is especially critical—just like the beginning of a movie or book.

That being said, being late to class is sometimes inevitable. If you are late, know that you are welcome to join the class, but please do so without distracting others.

Physics 1410 can occasionally be challenging, so why not give 100% attention? Do your best to avoid distractions from phones and watches. You are expected to be engaged in lecture, contribute when you can, and participate fully in recitation by staying on task and communicating with your classmates, TA, and instructor.

Students will be notified by Eagle Alert if there is a campus closing, see Campus Closures Policy (https://policy.unt.edu/policy/15-006).

Keys to Success

- Actively Participate in Class
    - Class is a valuable opportunity to practice problems, ask questions, and discuss concepts with your peers. If all you do is listen to the instructor, you may develop a false sense of understanding. It's important to attempt problems on your own or with a neighbor so that when the instructor presents the solution, you can identify the subtle or confusing parts.
- Ask Questions
    - It is okay to ask a question that has already been answered. Asking questions shows that you are thinking critically and actively trying to learn, and that is the goal. If a question comes to mind while you are studying at home, write it down so you can bring it up in the next class, during my Office Hours, or during a group study session. Explore Navigate360's Study Buddy (https://navigate.unt.edu) tool to join study groups.
- Learn From Mistakes
    - Learning involves making mistakes. If you never make mistakes, you're not being sufficiently challenged. Aim to make most of your mistakes on homework and during in-class practice, so you can ask questions and review your notes or textbook before the exam. If you make a mistake on an exam, take time to understand what went wrong and learn from it to avoid repeating it in the future.

Support

I do not expect you to go through this course alone. Whenever you find yourself in need of some assistance, know there are many options available to you.

- Meeting with me or the TAs during drop-in office hours
    - I truly enjoy teaching physics, and I am more than happy to help you outside of class individually or in groups.
    - Feel free to drop by during my drop-in hours or schedule an appointment via email. I will also respond to emails regularly between the hours of 9 AM – 5 PM Monday through Friday and will do my best to respond in a timely fashion on the weekend and in the evening.
- FREE tutors provided by the Physics Instructional Center
    - There are free tutors in Hickory Hall in the Physics and Biology Resource Center (Room 266) – check Canvas for hours.
- Learning Center's Lead Tutors
    - Lead Tutors are top UNT students who have made an 'A' in the classes they tutor, maintain at least a 3.0 GPA, and are extensively trained to facilitate successful sessions and help students become better learners.

- Lead Tutors offer one-on-one appointments, hold drop-in hours, and review questions submitted through our Ask-A-Tutor form. Students can access all of their services through the website: https://learningcenter.unt.edu/tutoring.

Inclusion

Every student in this class should have the right to learn and engage within an environment of respect and courtesy from others. We will discuss our classroom's habits of engagement, and I also encourage you to review UNT's student code of conduct so that we can all start with the same baseline civility understanding (Code of Student Conduct) (https://policy.unt.edu/policy/07-012).

Academic success resources

UNT strives to offer you a high-quality education and a supportive environment, so you learn and grow. As a faculty member, I am committed to helping you be successful as a student. To learn more about campus resources and how to succeed at UNT, go to unt.edu/success and explore unt.edu/wellness. To get all your enrollment and student financial-related questions answered, go to scrappysays.unt.edu.

Accommodations

The University of North Texas makes reasonable accommodations for students with disabilities. To request accommodations, you must first register with the Office of Disability Access (ODA) by completing an application for services and providing documentation to verify your eligibility each semester. Once your eligibility is confirmed, you may request your letter of accommodation. ODA will then email your faculty a letter of reasonable accommodation, initiating a private discussion about your specific needs in the course.
You can request accommodations at any time, but it's important to provide ODA notice to your faculty as early as possible in the semester to avoid delays in implementation. Keep in mind that you must obtain a new letter of accommodation for each semester and meet with each faculty member before accommodations can be implemented in each class. You are strongly encouraged to meet with faculty regarding your accommodations during office hours or by appointment. Faculty have the authority to ask you to discuss your letter during their designated office hours to protect your privacy. For more information and to access resources that can support your needs, refer to the Office of Disability Access website (https://studentaffairs.unt.edu/office-disability-access).

Required Materials

1. Textbook:
   For the textbook, please use the following option: College Physics 2e from OpenStax, which is freely available and can be viewed online and is freely downloadable.
   https://openstax.org/details/books/college-physics-2e
   There are also free student resources available, including a Student Solution Guide.
   OpenStax is a nonprofit ed-tech initiative based at Rice University. It provides free, peer-reviewed, openly licensed textbooks for introductory college courses.
   OpenStax is licensed under Creative Commons Attribution License v4.0.
   Color: ISBN-13: 978-1-711470-83-2 Black and White: ISBN-13: 978-1-711470-82-5
   Digital PDF: ISBN-13: 978-1-951693-60-2
2. At Home Practice will be completed through the Physics LE and will be reachable through the following link. https://www.physicscurriculum.com/
   Physics LE has a textbook and homework cost of $29 per student per semester. Homework is intended to be practiced, so there is no penalty for an incorrect answer as long as you arrive at the correct answer before the submission deadline.

3. Access to a Computer or Laptop: Some assignments cannot be completed from mobile devices such as phones, tablets, or Chromebooks. Supplementary materials and/or readings may also require a computer. This course has digital components. To fully participate in this class, students will need internet access to reference content on the Canvas Learning Management System. If circumstances change, you will be informed of other technical needs to access course content. Information on how to be successful in a digital learning environment can be found at Learn Anywhere (https://online.unt.edu/learn).
4. Calculator: For exams, you will need a calculator that is not a communication device (e.g., your phone or smartwatch). The calculator needs to be able to do trigonometric calculations, but graphing is not required.

Assessing Your Work

Grades will be determined by the following percentages:

At Home Preparation and Practice	15%
Recitation	15%
Exams (15% each)	60%
Project	7%
Attendance	3%
Total	100%

The final class letter grade depends on your course percentage:

≥89.50%, you will receive an A
<89.50% and ≥79.50%, you will receive a B
<79.50% and ≥69.50%, you will receive a C
<69.50% and ≥59.50%, you will receive a D
<59.50%, you will receive an F

At Home Preparation and Practice

Physics is not a spectator sport – you must engage with the content by reading about the concepts, studying solved examples, and working problems yourself. I respect the time and effort these tasks take and therefore a significant portion of your final grade is determined by the activities you complete outside of lecture. I understand that most students will occasionally miss assignments. To compensate for various possible scenarios throughout the semester that may cause an assignment to not be turned in or not go well, the three lowest scores from this category will be dropped.

Before Lecture Preparation

Class time is used most efficiently when everyone has pre-read the section(s) of the text that is stated to be discussed and thought a bit about the content.

- Pre-Lecture assignments will be posted in Canvas and **will be due by 11:59 pm** the night before lecture. This will give me time to review your responses and adjust my lecture if needed. Your textbook is a vital source of information for the topics covered in class, and you are expected to complete the reading assignment and watch the assigned videos.
- Late work is not accepted, unless lecture is postponed (due to weather or other university closure, or instructor emergency)
- I expect everyone to complete the reading before class, but I do NOT expect you to understand everything completely – we will get there together!

After Lecture Practice

Follow up lecture by practicing problems, which is key to understanding physics. I encourage you to begin these assignments early, as it is unlikely you will be able to complete them in one sitting. I encourage you to follow the practice of Distributed Studying – work a few problems each day.

- Practice sets are available online through Physics LE.
- Assignments will be **due by 11:59 PM Central**
- Late work will be accepted after the due date, with penalty (see Canvas).
- I encourage you to work in groups. Many problems will have random values within the problem, so you must submit your own work. You should write-up the final solutions individually, in your own words.
- Make sure you understand the reasoning behind the solution.

Recitation

The purpose of recitation is to practice problems with your classmates and to ask questions.

- My expectation is that you are actively engaged with your group for the entire class period. Be willing to make mistakes and volunteer tentative ideas for discussion.
- You should not be on your phone or working on other assignments. Your score will be reduced if we notice that you are off task or not contributing.
- You may be required to turn in a paper copy of your work, upload a photo to Canvas to an Assignment/Quiz/Discussion Board in Canvas, or submit to Pearson Mastering Physics.
- Attendance is required. You may not earn credit by completing the tasks at home. However, if you miss recitation, you should work the problems yourself and ask about them during office hours or tutoring. They may appear on exams!
- The top 25 scores will be averaged and assigned to the Recitation category.

Project

In physics classes, we often talk about a limited number of scientists and experiments/technology. But, there are so many individuals that can be role models for us that fall outside of the few we cover in class. Every student deserves the chance to see themselves in science. The goal of this project is for students to research and present an experiment/technology that inspires them. The topic you choose must be approved by the instructor and be connected to course content. More detailed information about this project will be posted in Canvas.

Exams

The final way for you to demonstrate your mastery of the course content is through examination.

- There are four *in-class* unit exams. Each unit exam focuses on newly covered topics but may require prior physics knowledge. The exams will be held as indicated in the schedule at the end of the syllabus.
- All exams will be in-person and are closed book without access to additional online or digital resources. An equation sheet will be provided. You must provide your own calculator. You will be notified in Canvas if additional materials are permitted.
- Exams will be taken in the Sage Hall Testing Center.
- Be extremely quiet in the hallway outside of the Testing Center before and after your exam and while in the common space within the Testing Center. If you want to chat with classmates before or after the exam, use the wonderful spaces on the first floor of Sage Hall, NOT the hallway outside of the Testing Center.
- Missed exams will receive a score of zero and no make-up exams will be given unless you have a university-approved absence.
- Questions about exam grading must be directed to the instructor in writing within one week of receiving your graded exam.
- A final exam will be offered in the regular classroom. The final exam will have four sections, corresponding to each of the unit exams. Your score on each section of the final exam will used to calculate a weighted average with your original attempt. This score can replace the corresponding unit exam score. More information about the final exam will be provided in lecture.

Extra Credit

Extra credit may be offered for students on the edge of two letter grades. See Canvas for details.

GenAI use

I use GenAI to as a tool to help me brainstorm, find connections between class content and the different majors represented in this course, and to streamline tasks like creating graphics. I will always disclose how I use GenAI, and I expect the same from you. Using any tool to solve physics problems for you may seem like a good decision in the moment, but this action does not support learning, and so I strongly discourage it. In accordance with the UNT Honor Code, unauthorized use of GenAI tools is prohibited. Using GenAI content without proper credit or substituting your own work with GenAI undermines the learning process and violates academic integrity. If you're unsure whether something is allowed, please seek clarification.

Course Schedule

The Tentative Course Calendar is presented on the next page.

Date	Topics	Textbook	Activities
Week 1	Foundations of science; motion basics; vectors	1.1, 1.2, 1.4 2.1-2.3	Recitations At Home Prep At Home Practice #1 (Physics LE Intro)
Week 2	1D motion	2.1-2.8	Recitations At Home Prep At Home Practice #2
Week 3	2D motion; Forces and Newton's Laws	3.1-3.4 4.1-4.7	Recitations At Home Prep At Home Practice #3
Week 4 *No class Mon, Sept 7	Tension and Friction; Drag Force; Elasticity	5.1-5.3	Recitations At Home Prep At Home Practice #4
Week 5 Unit 1 Exam	Uniform Circular Motion; Gravitation	6.1-6.5	Recitations At Home Prep At Home Practice #5
Week 6	Work and Energy	7.1-7.7	Recitations At Home Prep At Home Practice #6
Week 7	Collisions and Momentum	8.1-8.5, 8.7	Recitations At Home Prep At Home Practice #7
Week 8 Unit 2 Exam	Statics and Torque; Rotational Kinematics	9.1-9.4, 9.6 10.1-10.3	Recitations At Home Prep At Home Practice #8
Week 9	Angular Momentum	10.4-10.5	Recitations At Home Prep At Home Practice #9

Week 10	Statics and Dynamic Fluids	11.1-11.9	Recitations At Home Prep At Home Practice #10 Project Topic Submitted for Approval
Week 11 Unit 3 Exam	Fluids review	11.1-11.9	Recitations At Home Prep At Home Practice #11
Week 12	Thermal expansion; Heat Transfer; Thermo Oscillatory Motion	12.1-12.7 13.1, 13.2 14.1, 14.4- 14.7	Recitations At Home Prep At Home Practice #12
Week 13	Waves; Sound; Physics of Hearing	16.1-16.11 17.1-17.8	Recitations At Home Prep At Home Practice #13
Week 14 Unit 4 Exam	Sound review		Recitations At Home Prep At Home Practice #14
Week 15	Course Review		Project Submission & Peer Reviews
Week 16		Final exam	12/8 10:30 am – 12:30 pm; PHYS 104